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# Custom Ride Garage

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**ABSTRACT :**

The car modification industry has grown significantly, with users seeking personalized enhancements to their vehicles. However, visualizing modifications before implementation remains a challenge. This research presents a web-based Car Modification System which is named as CustomRide Garage that enables users to customize preloaded car models by altering tires, color, special disabilities features and rear shields. The system provides an interactive interface where users can experiment with different combinations and generate a document that serves as a visual reference for professional modifiers. This approach eliminates ambiguity in communication, enhances decision-making, and streamlines the modification process. By leveraging digital customization, the proposed system offers an efficient and user-friendly solution for car enthusiasts and modification professionals.

**Keywords:** Automobile, Visualization, Computer-aided design (CAD), Streamlining, System analytics

## INTRODUCTION :

Car modification is a popular practice among automobile enthusiasts who seek to enhance the aesthetics and performance of their vehicles. Whether it is upgrading tires, applying special disabilities features, changing the color, or adding a rear shield, modifications allow users to personalize their cars according to their preferences. However, one of the biggest challenges faced by car owners is effectively communicating their desired modifications to professional modifiers. Often, miscommunication or lack of a clear visual reference leads to unsatisfactory results, additional costs, and wasted time.

To address this issue, we propose a Car Modification System, a web-based platform that allows users to customize preloaded car models by altering specific features such as tires, color, and rear shields. The system provides an interactive interface where users can visualize modifications in real time that is in VR, experiment with different combinations, and finalize their choices. Once satisfied with their selections, users can generate a document containing images of their customized car, which serves as a visual reference for professional modifiers.

This system eliminates the guesswork involved in car modifications by offering a structured and clear representation of user preferences. Instead of relying on verbal descriptions or hand-drawn sketches, car owners can present in VR visualization and then in a professionally generated document that accurately showcases their desired modifications. This improves communication between customers and modifiers, reducing the chances of errors and misunderstandings.

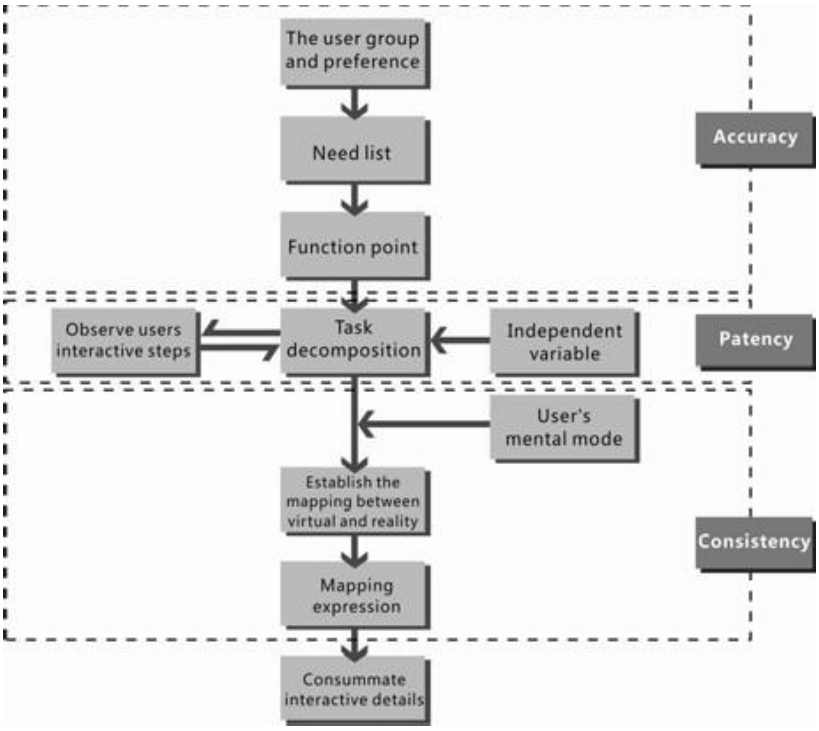
Additionally, the platform enhances user engagement by allowing them to explore different customization possibilities before making a final decision. It caters to car enthusiasts who enjoy experimenting with modifications and provides a valuable tool for professional workshops looking to streamline their workflow. By integrating digital visualization into the car modification industry, this system bridges the gap between imagination and execution, making the modification process more efficient, precise, and customer-friendly.

**Some of the benefits of using a car modification system include:**

- Visual Representation of Modifications
- Time and Cost Efficiency
- User-Friendly Experience
- Enhances Customer Satisfaction
- Encourages Creativity

## STRUCTURAL DESIGN.

The Car Modification System is a web-based platform that allows users to customize preloaded car models by modifying tires, color, and rear shields. The system provides an interactive interface where users can visualize changes in VR and generate a document that serves as a reference for professional car modifiers. This system improves customization efficiency and enhances communication between car owners and modification professionals.




***1.1 User Interface (UI)***

- ***User Dashboard:***

1. **Car Selection:** Users can choose from a set of preloaded car models.
2. **Customization Panel:** Allows users to modify tires, car color, and rear shield.
3. **Preview Section:** Provides a real-time visual representation of modifications in VR.
4. **Save & Generate Document:** Enables users to save their modified car design and generate a reference document for modifiers.

- ***Modifier Dashboard:***

1. **View Customer Requests:** Allows professional car modifiers to view customer-submitted modification documents.
2. **Download Design Document:** Enables modifiers to download the generated document for reference.
3. **Communication Panel:** Allows modifiers to contact customers for further details if needed.

- ***Admin Dashboard:***

1. **User Management:** Manages customer and modifier accounts.
2. **Car Model Management:** Adds, updates, or removes preloaded car models and modification options.
3. **System Analytics:** Provides insights into user activity and popular customization trends.

***1.2*** **Database Design**

- **Users:** Stores user customization history.
- **Car Models:** Stores details about preloaded car models available for customization.
- **Modifications:** Tracks modification options such as tires, colors, and rear shields.
- **Customization Records:** Saves user-created designs, allowing them to retrieve past modifications.
- **Documents:** Stores generated modification documents for users and modifiers.

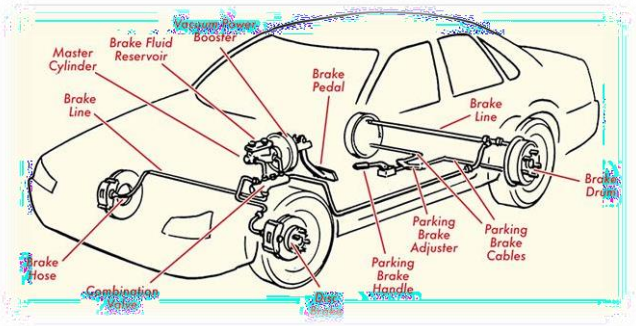
***1.3*** **Functionality**

- **Car Customization:** Users can modify car tires, color, special disability features, and rear shields using an interactive interface.
- **Real-Time Preview:** Displays an instant preview of modifications to help users visualize their designs.
- **Document Generation:** Converts the final customized car into a downloadable document for professional reference.
- **Feedback & Communication**: Users can provide feedback on modifications and communicate with professionals if needed.

***1.4*** **Technology Stack**

- **Frontend:** HTML, CSS, JavaScript, React

- **Backend:** Python, Node.js
- **Database:** MongoDB

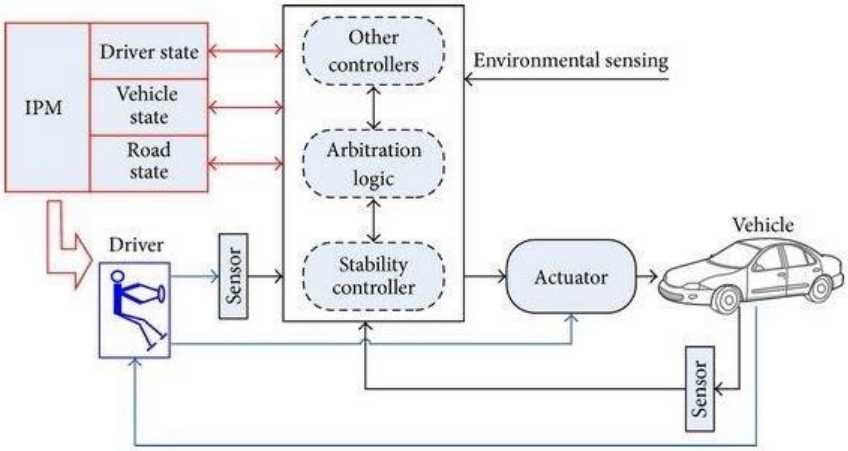



### *1.5 Overall System Architecture*

***Main User Roles:***

- **Users (Car Owners):** Select preloaded car models, customize them and display them in VR, and generate documents.
- **Car Modifiers (Professionals):** View customer modification requests and reference the provided documents.
- **Admin:** Manages user accounts, car models, and system analytics.
- **Web-Based Application:** Accessible from any device with an internet connection.
- **Database:** Stores all information about car models, customization options, users, and generated documents.

This structured design ensures an efficient and user-friendly car modification experience, improving the communication between customers and professional modifiers while streamlining the entire process.




## Literature Review :

Car modification has long been a popular practice among automobile enthusiasts, allowing them to personalize their vehicles based on aesthetics, performance, and functionality. Traditionally, the process of car customization has been manual, requiring car owners to describe their desired modifications to professional modifiers, often leading to communication gaps, misunderstandings, and unsatisfactory outcomes. Researchers have explored various technological advancements to address these issues, leading to the development of digital car customization tools, 3D modeling software, and web-based car configurators. Computer-aided design (CAD) tools such as Autodesk and Blender have been widely used in the automotive industry to visualize modifications; however, these tools require technical expertise, making them inaccessible for casual car owners. In contrast, web- based car customization platforms developed by automobile manufacturers allow potential buyers to preview different color options, tire designs, and accessories before making a purchase. Studies indicate that such platforms enhance user engagement and decision-making by providing real-time visual feedback. Despite these advancements, most existing systems focus on predefined manufacturer options rather than aftermarket modifications, creating a gap in the market for a more flexible, user-friendly car modification platform. Image-processing techniques, including Augmented Reality (AR) and Virtual Reality (VR), have also been explored in car customization, enabling real-time interaction with modified car designs. While these technologies offer an immersive experience, their implementation is often costly and requires specialized hardware, limiting accessibility for general users. A more practical approach is a web-based image modification system that provides a straightforward, interactive interface for customizing car components such as tires, colors, and rear shields. Additionally, research highlights the importance of structured

documentation in design-related fields, suggesting that a document-based customization system could significantly improve communication between car owners and professional modifiers. By generating a visual reference document that outlines selected modifications, users can ensure that their preferences are clearly conveyed, reducing errors, unnecessary costs, and modification time. While existing research highlights the benefits of digital customization tools, there remains a lack of a dedicated, user- friendly system specifically for aftermarket car modifications. The proposed Car Modification System aims to address this gap by providing an interactive web-based platform where users can select preloaded car models, customize their features, and generate a reference document for professional modifiers. This approach not only enhances user experience but also streamlines the communication process between customers and professionals, making car modification more accessible, efficient, and precise.

## CASE STUDY :

- ***Project Goals:***

The Car Modification System is designed to help users customize cars online by changing tires, colors, and rear shields. It allows users to see real-time modifications and generate a document as a reference for professional car modifiers. The main goals are:

1. To create an easy-to-use platform for car customization.
2. To provide clear visual references for professional modifiers.
3. To improve communication between users and car modifiers.
4. To make car modification more accessible and accurate.

***System Features:***

**User Module:**

1. Select Car Model – Users choose from preloaded car models.
2. Customize Car – Modify tires, color, and rear shield.
3. Preview Changes **–** See real-time modifications.
4. Generate Document – Save and download a modification reference.

**Modifier Module:**

1. View Customization Requests – Access user-generated documents.
2. Download Design Document – Use it for accurate modifications.
3. Communicate with Users – Ask for more details if needed.

**Admin Module:**

1. Manage Users – Control user and modifier accounts.
2. Manage Car Models – Add or update car customization options.
3. Track System Usage – View trends and reports on modifications.

***Development Process:***

1. **Technology Used:**

a) Frontend: HTML, CSS, JavaScript, React.
b) Backend: Python, Node.js.
c) Database: MongoDB for storing user data and car models.

2. **Database Structure:**

Stores user modifications, car models, and customization records.

3. **User Interface:**

Designed to work smoothly on desktops, tablets, and mobile devices.

4. **Testing & Feedback:**

a) Tested by a small group of users and car modifiers.
b) Feedback helped improve ease of use and document accuracy.

The system successfully makes car customization simple and efficient, helping users visualize their modifications and ensuring clear communication with professional car modifiers.

## CONCLUSION :

The Car Modification System provides a user-friendly platform for car enthusiasts to customize their vehicles online. By allowing users to modify tires, car colors, special disability features, and rear shields using preloaded car models, the system makes customization easier and more accessible. The ability to generate a visual in VR and then use the reference document to ensure clear communication between users and professional car modifiers, reducing errors and improving modification accuracy.

Throughout the development of this project, we gained valuable insights into web development, database management, and user interface design. We faced challenges in organizing customization options and ensuring smooth functionality, but through testing and improvements, we created an efficient

and reliable system. The project successfully simplifies the car modification process, enhances user engagement, and improves communication between customers and professionals.

REFERENCES :


1. Chunfu Li, Yangmeng Ke, Yuhui Wang. (2013) Research on the Interaction of Car Online Modification Based on Virtual Display. International Conference on the Modern Development of Humanities and Social Science (MDHSS), 1(2), 485-495
2. Shao, J., Zhang, Y., Yu, Z. (2021). Research on Development and Application of Virtual Reality System for Car Styling Review, 3(3), 12-16
3. Kumar, G. (2015). Training Placement Activities in Context with Industry-Institute Interaction. International Journal of Emerging Research in Management & Technology, 2(4), 67-78.
4. DT Editorial services. Dreamtech."HTML5 covers CSS3, JavaScript, XML, XHTML, AJAX, PHP and jQuery", 4(1), 287-300
5. Mike McGrath. JavaScript 5th Edition, 129-149
6. "CustomRide Garage" International Research Journal of Modernization in Engineering Technology and Science. (2025) Volume:05/Issue:24/March- 2025.